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(54) SYNTHETIC SILICA GLASS OPTICAL BODY FOR ULTRAVIOLET LASER AND PRODUCTION THEREFOR

(57) Abstract:

PURPOSE: To enhance homogenization and high purity and resistance to laser by performing stria removing treatment and internal strain removing treatment and incorporating OH group and Cl and constituting fluctuating distribution of the specified refractive index and incorporating H_2 molecules.

CONSTITUTION: A heated glass gob is obtained by regulating the concn. distributions of OH group and Cl of a high purity synthetic Si glass gob wherein a stria is free and thereafter heating the Si glass gob at 1000-1200°C. Then removing treatment of internal strain is performed by slowly cooling this glass gob. Further, the glass gob is obtained by performing such constitution that both refractive index fluctuating distribution based on the virtual temp. distribution formed to the direction of a central region from the circumferential edge region of the glass gob and the refractive index fluctuating distribution based on the concn. distributions of OH group and Cl are mutually canceled. Then this glass gob is treated at 200-1000°C in the gaseous H_2 atmosphere at normal pressure or pressurization. A synthetic silica glass optical body is produced which incorporates H_2 molecule not less than about 5×10^{18} (molecule/cm^3) for inhibiting deterioration of transmittance of light due to irradiation of ultraviolet laser such as KrF excimer laser and has $\leq$50ppm concn. of OH group.